South African Reserve Bank Working Paper Series WP/23/03

Dividends policy and payouts: evidence from South Africa

Ciaran Driver, Anna Grosman, Pasquale Scaramozzino and Keagile Lesame

22 May 2023

SOUTH AFRICAN RESERVE BANK

Information on South African Reserve Bank Working Papers can be found at
https://www.resbank.co.za/en/home/publications/Papers/working-papers

Enquiries relating to the Working Paper Series can be addressed to:
Head: Economic Research Department
South African Reserve Bank
P O Box 427
Pretoria 0001

Tel. +27 12 313 3911

Dividends policy and payouts: evidence from South Africa

Ciaran Driver,[1] Anna Grosman,[2] Pasquale Scaramozzino[3] and Keagile Lesame[4]

Abstract

The theoretical framework that informs dividend studies is somewhat loose. This makes it difficult to test competing views on dividend behaviour. One view is that it reflects a useful discipline on managerial autonomy to invest; another view is that it represents a constraint on investment due to misinformed or short-term investors. As a first step in researching this issue, this paper estimates a dividend pay-out relationship for South Africa. Estimated results are obtained for separate panels of listed and unlisted non-financial firms.

Among the notable results, we find that standard proxies for investment opportunity do not generally find significance. The effect of past profitability, firm size and age are in line with developed country results, but the tendency to smooth dividends seems weaker, particularly for unlisted firms. Leverage is generally negative for the listed sample in line with existing literature, but the sign is reversed for the unlisted sample. There is weak evidence that a major tax reform, effective after 2012, increased the smoothing, and possibly also the trend in the level, of dividends. Payout behaviour seems to differ considerably by industry, but ownership effects are only observable for larger firms.

JEL classification

Key words

---

[1] SOAS University of London. Corresponding author, email: cd12@soas.ac.uk
[2] Loughborough University London.
[3] SOAS University of London and Università di Roma Tor Vergata.
[4] National Treasury of South Africa.

1. Introduction[5]

South Africa's relatively low growth rate compared to peer countries has many causes but one frequently emphasised is the role of private sector investment (Driver and Harris 2021). Constraints on investment may, of course, reflect poor prospects of a return, due to market inefficiencies, poor regulation, a lack of complementary assets such as skills or infrastructure, or access to loans or other forms of finance. However, constraints may also arise due either to risk aversion by management or to the short-termism of shareholders. This may then be reflected in an economy-wide higher payout to investors and a lower rate of reinvestment. In any economic environment, the culture and institutions of managers and investors can heighten this investment constraint beyond that warranted for a desired growth path. This concern explains why the study of dividend behaviour is important: it contributes to the debate on the financing of investment and to the search for growth-promoting policies.

Under financial constraint, if dividends are for some reason sticky downwards, capital investment may be cut – wholly or partially – to maintain dividends. In other words, investment decisions and dividend payout decisions may not be independent.[6] In the aftermath of the 2008 financial shock, cash-constrained United States (US) firms planned to cut both investment and dividends by equal amounts. There is some evidence that profitable investment may be sacrificed in these circumstances to defend the payout (Campello, Graham and Harvey 2010). Even before the financial crisis, senior corporate executives indicated in surveys that such a trade-off existed, and less than 40% agreed that dividend decisions are made after the investment decision (Brav et al. 2005). The same feature was observed in a long-term study of UK dividends between 1974 and 1999, which noted that in adjusting to a balance sheet shock, real outcomes such as investment may suffer as dividends are protected (Benito and Young 2003).

---

[5]   We are grateful to Laurence Harris, who helped with the initiation and design of the project. We thank anonymous reviewers for helpful comments, as well as participants in the presentation of the results at a SARB online seminar initiated by Konstantin Makrelov and chaired by Xolani Sibande on 11 November 2022. We also thank National Treasury for facilitating this research.

[6]   This view now finds general acceptance (Stein 2003), though the prevailing orthodoxy for many years was that "investment and dividend decisions are completely independent" (Copeland and Weston 1988: 596).

The comparatively low aggregate savings and investment rates in South Africa, which contribute to macroeconomic fragility, justify attention being given to dividend payout policies as a factor in explaining growth rates. This paper is concerned with the determinants of dividend payout in South Africa rather than the effects of variations in payout; independent studies of their effects will be able to build on the results presented here. Additionally, the results are expected to inform independent work on further developing the interrelations within the financial sector, and between the financial and real sectors of South Africa's economy.

2. Dividend theory: background

The dominant theory on dividends stems from a general agency approach based on potential owner-manager misalignment (Eisenhardt 1989) where overinvestment is a central concern (Jensen and Meckling 1976) – something that may be addressed by vigilant monitoring and reduced managerial autonomy. Thus, in most standard accounts of dividends, the assumption is that the availability of finance to firms on competitive terms risks being curtailed by a potential tendency to pay insufficient dividends.

This theoretical edifice can be useful where raising capital is impeded by weak legal investor protection (La Porta et al. 2000) or where managers are insulated from takeover and governance pressure. In other contexts, the centrality of agency theory is more questionable (Demsetz 1993), especially if monitoring costs are high, as noted in Jensen and Meckling (1976: 328) – a point ignored in much subsequent research. The assumption of overinvestment, while not unquestioned (Bertrand and Mullainathan 2003), tends to be the default position in research papers while the issue of financial constraints stemming from dividend policy tends to be ignored.

A problem with exclusively relying on agency theory is that it omits any role for shareholders to impose a short-term horizon on management, despite the prevalence of this view in financial practice and recent empirical studies (He and Tian 2013; Asker, Farre-Mensa and Ljungqvist 2015; Driver, Grosman and Scaramozzino 2020). Agency theory predates the great historical shift towards shareholder primacy, codified corporate governance and financial regulation that have characterised most

economies since the 1980s. While agency theory may have accurately captured features of US conglomerates of the 1970s, it may be less relevant to more modern contexts where underinvestment is arguably a greater issue of concern, at least in some jurisdictions.

3. The literature on dividend payout decisions

3.1 General overview of empirical research on dividends

The dividend behaviour of listed companies has been widely studied in an international context. There is no consensus on a single theoretical model even for more developed economies, which reflects the multiple influences that determine firms' dividend policies in distinct ways. However, the different theories have been reprised in a number of survey articles such as Brav et al. (2005), Séverin and Du Jardin (2011), and Baker and Weigand (2015). Most studies focus on the behaviour of listed companies because the theory is less developed for private and family firms. Furthermore, there may be a difficulty in distinguishing profits from owner-manager income. The findings of one recent survey of unlisted companies show considerable variation in the magnitude, sign and significance of key variables (Molly and Michiels 2021).

Some stylised facts about the dividend policy of listed firms are generally agreed on. The most important of these originate from US survey work in the 1950s recounting how dividends are determined by target payouts that are tracked with a lag, thus smoothing the response towards a target that depends on earnings. There is a near-universal custom to regard dividend cuts as a signal of bad news, and smoothing as a way of reducing the likelihood of a cut being necessary. Other stylised facts have been noted but these are less easy to generalise across place and time. Dividends appear to be non-perfect substitutes for the repurchase of shares (buybacks) as they are less flexible (Kahle and Stulz 2021). Dividends are increasingly concentrated, with the bulk of payments accounted for by very large firms. The proportion of listed firms paying dividends varies over time in ways that can reflect the tendency of firms to list and the changing characteristics of the sample, or unexplained trends. In the US, the first two considerations appear to explain much, but not all, of the increase in the proportion of dividend-paying firms in the last two decades, which followed a period of

"disappearing dividends" up to the year 2000 (Kahle and Stulz 2020; Michaely and Moin 2022).

Two distinct features of dividend behaviour are the decision to pay and the level of payout. The decision to pay tends to be a life-cycle issue. Small, young firms cannot be sure of smoothing dividends and thus delay issuing them until earnings are more stable, after which payment tends to be continued. The prevailing level of earnings volatility may matter here for the critical earnings threshold, which initiates dividend payment.

The decision on the level of payout is also to some extent explainable by a life-cycle model. Large, mature firms have cash in excess of investment opportunities and can afford to return it to shareholders. These observations explain how a dividend specification contains terms in both earnings and investment opportunity, that is, past profit and expected profit rate available on a new investment, though these may be difficult to identify separately.

A major policy-relevant feature of the dividend debate is whether dividends pre-empt productive investment because of short-term pressure from investors, as argued in respect of both buybacks (Lazonick 2018) and dividends (Driver, Grosman and Scaramozzino 2020). This links to the issue of how corporate governance influences dividend policy. The historical treatment of dividend policy relied heavily on an agency explanation for payout. Under asymmetric information between managers and dispersed investors, the agency view is that managers need to be deterred from self-interested or non-productive investments; an expectation of regular dividend flow could act as a substitute for close monitoring by the board or other investors. In this framework, dividends were a substitute for both debt (a hard constraint on managers) and governance itself.

Over time, however, the emphasis changed from this substitution version of agency theory to an outcome version of this theory where good governance – or engaged owners – resulted in a greater effort to counter agency concerns and thus generated higher profits that could be distributed as payout (Adjaoud and Ben-Amar 2010). The

outcome theory is supported by numerous studies confirming that corporate governance intensity is associated with higher dividends.

The influence of governance on dividends needs to be seen in perspective. The "outcome" interpretation that is generally drawn depends on maintaining the hypothesis that agency theory is the dominant correct narrative. However, that is just one perspective, albeit a dominant one. It can also be argued that the influence on dividends from intensified governance can be explained by investor pressure theory (Driver, Grosman and Scaramozzino 2020). Here the dividend behaviour of firms in Anglophone countries is said to be influenced by the turn towards shareholder value that characterised these economies from the 1980s, initiating a culture where the balance was tilted towards extracting dividends over reinvestment and where investor caution was privileged over the managerial enterprise and innovation (Lazonick 2018). Recent work has reprised this argument from a South African perspective (Andreoni, Robb and Van Huellen 2021).

A good expression of these alternative views – agency versus investor pressure – is contained in the following quote from Kahle and Stulz (2020: 31) on why the US payouts were so high in the 2000s:

> [P]art of the increase in payout rates can be explained by the fact that firms are more sensitive to determinants of payouts in the 2000s. […] An increase in the sensitivity of payouts could be a positive development if it means that firms are less likely to hoard funds internally that could be invested more profitably outside the firm. Alternatively, such an increase could be problematic if it means that firms are more reluctant to take advantage of valuable internal investment opportunities.

The issue here is central to much modern debate on corporate governance. Are the effects benign in controlling agency, or malign in the sense of aggravating short-termism? Kahle and Stulz (2020) suggest that the proposition that high dividends constrain investment is "implausible".

6

However, the reasoning offered suggests that the question remains open. Essentially, their argument is that in the periods 1971–1999 and 2000–2019 capital expenditure fell "equally for top payers and other payers, as well as for payers and nonpayers". But the reported finding is that the ratio of capital expenditure to assets differs between top payers and other payers to a significant degree after 2000 and is not significant before (Kahle and Stulz 2020: 17).

Part of the reason why the issue is difficult to resolve is that there is no reliable indicator of investment opportunity available to a researcher to judge the appropriate balance between investment and payout. The investment opportunity is usually proxied by the market-to-book ratio (or Tobin's Q) and growth rate of assets. The latter proxy is backward looking while the former can be criticised, first, for being an average rather than a marginal metric and, second, because it can simply reflect variation in market power and rent (Kahle and Stulz 2020). Nevertheless, to the extent that these proxies are valuable, they can be interacted with indices of corporate governance to discriminate between the competing views above and to establish whether dividends respond more positively to governance and investor pressure when investment opportunities are low.

Investor pressure theory is somewhat related to catering theory whereby investors have time-varying preferences for dividend-paying stocks (value stocks over growth stocks) that affect the threshold at which firms start to pay dividends. The evidence for this is inconclusive for advanced countries (Baker and Weigand 2015; Kahle and Stulz 2020). For developing countries with stock markets there is an additional reason for firms to attend to a particular clientele who act as the marginal investor. Here, under cross-listing or foreign listing, catering may reflect a need to satisfy foreign investors. These investors may demand stable returns as asymmetric information distorts their understanding of earnings variation. In this context, smoothed dividends become essential even if that entails higher debt or lower investment (Balli et al. 2022; Andreoni, Robb and Van Huellen 2021).

Most of the theoretical contributions on dividends come from studies in advanced countries. There may be additional concerns or different emphases when studying firms in emerging markets. For example, if investor protection is low, especially for

minority shareholders, agency theory may have more relevance. The likelihood of tunnelling (extracting funds from companies) may imply a premium put on dividends by minority shareholders. The economic context may also be one where firm liquidity is more important. Where analyst coverage of firms is thin, there will be greater asymmetric information, leading to a greater role for signalling. This may apply particularly to cross-listed firms.

3.2 A note on previous studies of South African dividend payout

Despite the increased popularity of share repurchases since they were first allowed in July 1999, dividends are still the preferred payout method for South African companies (Wesson, Bruwer and Hamman 2015). It is therefore important to understand the specific factors underlying dividend behaviour.

We surveyed the dividend literature relevant to South Africa by first identifying journal articles published in English that appeared in scholarly journals listed on the Web of Science and that contained the keywords "dividend" and "South Africa". This search strategy returned 47 publications. We then read the titles and abstracts of all the articles. We discarded those of limited relevance for our purposes. From the remaining articles, we focused on those that attempted to explain dividend payout, whether in the context of a group of countries that included South Africa or where the sample was confined to South African firms or firms listed in South Africa.

The review articles confirm that studies of dividend behaviour in South Africa have tended to use models and estimation methods similar to those found in articles focusing on the US and other developed countries. In many cases, the studies appear to confirm the same range of variables in explaining dividends. The South African studies also tend to follow the established convention of excluding firms in the financial and resources sectors from estimation samples due to regulatory issues that may affect the payout.

The findings can be categorised according to whether the study was econometric or survey-based. For the former, the results obtained reveal the same range of disagreement as for previous studies in advanced economies. This may not be

surprising because the samples are generally of large firms listed on the Johannesburg Stock Exchange (JSE). Nevertheless, as with most of the international dividend literature, the results are not easy to compare across studies due to differences in samples (time period and cross-section), and different specifications of dependent variables and regressors. There are also considerable differences in estimation techniques and whether dynamics are included.

Most papers test for a role for size, an earnings variable, leverage and the growth of assets or sales, and sometimes age or a proxy for it such as the accumulated retained profit ratio; proxies for liquidity are sometimes added. The studies draw on different theories such as signalling, life-cycle, dividend smoothing or agency theory, but there seems to be no agreed finding in relation to these.

One illustrative study is that of Nyere and Wesson (2019), who use a data sample (1999–2014) sourced from the Iress database and hand-collected data. The fixed effects of the dividend payout ratio are estimated using the following regressors: company size, systemic risk, debt-to-equity ratio, a measure of investment opportunities, sales growth, profitability, free cash flow, net assets ratio and current ratio. The model is estimated separately for the pre-recession (1999–2007) and the post-recession (2008–2014) periods.[7]

Other studies of South African dividend behaviour use direct surveys of JSE-listed firms. The evidence from these studies is mostly qualitative and descriptive, with the directors or managers being asked to express their views on the relative importance of a number of factors that could influence their dividend decisions.

An illustrative study is Firer, Gilbert and Maytham (2008), who examined 46 usable responses (15%) to a survey of directors of JSE-listed firms, mostly large but representative of sectors in the index. The results show that directors believe that dividends do convey information to investors, though not strongly enough to constitute a reliable signal. Reducing dividends has negative consequences for the company,

[7]   Further details of the selected results of this study are contained in section 4, where they are compared with our own results.

and repurchase decisions are relatively independent of dividends, which are the preferred form of payout.

Two themes that occur throughout their report are the smoothing of dividends and the relation of dividends to investment. On smoothing, the survey confirms that South African firms are reluctant to cut dividends and tailor dividends to sustainable earnings, though less strongly than reported in similar work for the US (Brav et al. 2005). In relation to investment, the authors report a strong insistence by directors (66%) that dividends are made after investment decisions; this is twice the rate of US respondents, where only a third agree. However, there are some contradictory answers that modify that direct claim. The most likely alternative uses of cash to some form of payout are mergers and acquisitions, followed by capital investment; paying off debt comes after these. Specifically, a quarter of dividend payers would seek the alternative of repurchase while about 20% would prefer to invest and 30% would prefer mergers and acquisitions. This indicates that positive net present value projects for investment or re-organisation are available as alternatives to dividends. South African directors are also much more strongly motivated to reduce liquid assets than US ones – which may be sensible at times but it rules out maintaining flexibility for strategic projects. Furthermore, nearly 60% would not cut a dividend even if they had to raise new funds; in other words, they would add to the cost of investment so as not to reduce the dividend, implying that a marginal positive net present value project would be rejected – though the direct answers refute this. Finally, more than half the respondents believe that paying dividends makes their share price less risky, while about the same percentage see the share price as an important determinant of dividends – an indicator of investor pressure.

The reviewed literature also contains recent studies on the taxation of dividends in South Africa, focused primarily on the new tax legislation that was enacted in 2012. Importantly, this tax change altered the tax preferences of two groups of investors (namely, individuals and corporates) simultaneously. The change in South African dividend tax consisted of substituting a 10% tax on companies with a 15% tax on shareholders, paid directly by the company. Following the reform, corporate investors preferred dividends from a tax perspective, while individual investors preferred capital gains when the tax was the only consideration. The South African context, therefore,

allows for an investigation of the impact of changes in tax preferences on the general level of dividends as well as the responsiveness of dividends to their determinants.

Illustrative studies include Badenhorst (2017) and Nel (2018). They find that corporate investors were most advantaged in their dividend payments, with a corresponding increase in dividend payments after the reform.

4. Specification of a dividend equation for South African listed firms

From the reviewed studies of listed firms, we conclude that variables that matter for dividends are firm characteristics such as size (positive effect), expected profitability (positive effect), growth opportunities (negative effect), age (positive effect), leverage (conflicting findings), risk (negative effect), ownership (conflicting findings), governance and investor pressure (positive effect), and possibly the opportunity for buybacks (negative effect). The taxation of dividends would also be expected to have some effect on payout, but firms may have difficulty in identifying the tax position of the marginal investor. Empirically, taxation has been found to have only second-order influence (Brav et al. 2005). Other macro variables may also be important, so time dummies may be needed.

The interpretation of the above variables is not always consistent in the literature. However, it is possible to match the variables with some main theorised rationales for dividends as follows:
- To send *a signal* to investors, for example, to lessen the likelihood of takeover threats.
- To *avoid* hoarding cash – to *prevent agency* problems.
- To balance the need for reinvestment with *catering to investors* who require steady income.
- To lessen the need for dividend cuts or new issues in future periods by *smoothing* dividends over time.

A potential mapping of these objectives to the variable set identified in the literature is given below.

Table 1: The expected sign of variables identified in the literature

Variable	Expected sign and rationale
Size or age	(+) Maturity stage: fewer funds needed for reinvestment
Profitability	(+) Sharing funds with investors to avoid agency issues
Market-to-book ratio or asset growth rate	(-) Investment opportunity within the firm; (+) implying future growth potential
Leverage	(-) Risk metric or requirement to hold cash (-/+) agency perspective, implying leverage is dividend substitute via monitoring signal or complement via monitoring outcome
Lagged dependent variable	(+) Smoothing dividends over time to avoid future cuts or cash call

The following specification was adopted as a baseline representation of dividend payout.

$$D_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 ZA_{i,t-1} + \alpha_2 EA_{i,t-1} + \alpha_3 MBF_{i,t-1} + \alpha_4 DAA_{i,t-1} +$$
$$+\alpha_5 LEV_{i,t-1} + \alpha_6 SIZE_{i,t-1} + \alpha_7 AGE_{i,t} + \partial_t + \epsilon_{it} \tag{1}$$

where *D* is dividend payments, *ZA* is a vector of institutional or industrial features relevant to South Africa, *EA* is the ratio of earnings to assets, *MBF* is the market-to-book factor, *DAA* is the rate of change of assets, *LEV* is leverage, *SIZE* is a ranking of firm market value, and *AGE* is the company age.

4.1 Data sources for listed firms

The dataset contains all publicly listed firms trading on the JSE from 1991 to 2021. The data were collected from an institutional subscription to Refinitiv (a London Stock Exchange Group business division). Some variables were also sourced from Datastream, using Refinitiv Workspace for Microsoft Office and Datastream for Microsoft Office. The data are presented in South African rand (76% of firms in the sample report in South African rand). Duplicates were cleaned so that there was only one entry per company per year (where there were multiple classes of shares or other trading instruments, only the one with the most information was kept). The data were then transformed (reshaped) into panel form for each variable of interest. The final dataset was created by using companies' unique identifiers and year. The observations from appended datasets that were not matched with the main dataset

(containing the dividends data) were dropped from the final dataset to avoid missing data on dividend payers/non-payers. We excluded the firms from the financial and utilities sectors.

Table 2: Variable sources and definitions

Variable	Source	Definition
DIVIDEND Cash dividends	Datastream	Amounts paid by cash dividend payers, in nominal values and millions of South African rand.
EA	Refinitiv	The earnings ratio of a company is defined as the earnings before interest but after tax divided by the book value of assets.
MBF	Refinitiv/ Datastream	Market-to-book value of the firm. Market value is calculated as a product of average annual share price and number of shares outstanding, both from Datastream. Book value is total assets as per the balance sheet in a given year.
DAA	Refinitiv	DAA is defined as (annual change in total assets) / total assets.
LEV	Refinitiv	LEV is defined as [(total long-term debt) + (total debt in current liabilities)] / (total assets).
SIZE	Refinitiv	SIZE is defined as the percentile ranking / 100 of a company in the range of market values in the respective years.
AGE	Refinitiv	Age of firm since incorporation, in years.
INDEP	Refinitiv	The proportion of independent directors is calculated as the number of independent directors divided by the total number of directors on a firm's board.
MINING	Refinitiv	Mining sector dummy = 1 for mining; 0 otherwise.
OWN1	Refinitiv	Ownership concentration is estimated as the percentage of shares held by the largest shareholder.
OWN3	Refinitiv	Ownership concentration is estimated as the average percentage of common shares owned by the three largest shareholders.
FOREIGN	Refinitiv	Foreign ownership is defined as the sum of shares (in per cent) held by investors with a country address outside of South Africa; for instance, 95.02 means 95.02% of shares are held by foreign owners.

Descriptive statistics for the variable set used in the estimation are shown in Table 3.

Table 3: Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
DIVIDEND	3 204	2.201	5.673	-6.908	9.881
EA	3 204	0.057	0.105	-0.743	0.485
DAA	3 204	0.184	0.523	-0.617	4.475
MBF	3 204	0.819	0.850	0.010	6.430
LEV	3 204	0.184	0.182	0	0.868
SIZE	3 204	0.529	0.272	0	0.996
AGE	3 204	32.450	25.689	0.274	108.265
INDEP	3 171	0.239	0.229	0	1
MINING	3 204	0.105	0.306	0	1
OWN1	3 163	29.009	19.374	0.389	88.869
OWN3	3 163	16.034	7.0312	0.327	44.749
FOREIGN	3 094	44.013	24.649	0.155	100

5. Estimation and results for the listed sample

Fixed effects estimation was used in this study to control for time-invariant unobservable individual effects. A lagged dependent variable was included in the regressions to capture persistence in dividend payments. To ameliorate endogeneity, the relevant regressors were lagged. Only firms that had at least one non-zero dividend observation in the sample period were included. The data were not deflated but time dummies were used to control for any factors common to all firms in each period. Furthermore, variables were winsorized at 1% to reduce the influence of potential outliers.

Results for the baseline estimation (equation 1) are shown in Table 4. The expected sign and significance were obtained for SIZE and AGE, indicating the usual feature that mature firms pay higher dividends. The profitability variable EA was also significantly positive at least in some specifications, in line with expectations. However, no significance was observed for either of the indicators of investment opportunity, MBF and DAA.[8]

---

[8] The South African dividends study (Nyere and Wesson 2019) obtained a negative sign for leveraged Beta, which could be argued to be a rough proxy for a market-to-book value (Bernardo, Chowdhry and Goyal 2007), but it was not significant for the full period.

Table 4: Determinants of dividend payments: baseline estimations

	(1)	(2)	(3)
L.ldivds	0.062***	0.062***	0.063***
	(4.27)	(4.43)	(4.32)
L.ea	1.129*	0.808+	0.843
	(2.03)	(1.69)	(1.63)
L.lev	-1.225**	-1.257**	-1.313**
	(-3.11)	(-3.03)	(-3.11)
L.size	7.219***	7.021***	7.092***
	(9.17)	(9.28)	(8.07)
age	0.053***	0.040***	0.040**
	(4.56)	(3.47)	(3.32)
L.mbf	-0.056	-	-0.021
	(-0.73)		(-0.23)
L.daa	-	-0.040	-0.062
		(-0.51)	(-0.75)
constant	-1.510**	-0.779+	-0.834+
	(-3.10)	(-1.72)	(-1.70)
No. obs.	2 437	2 276	2 231
σ_u	2.041	1.776	1.784
σ_e	1.000	0.956	0.965
ρ	0.807	0.775	0.774
R^2 within	0.390	0.376	0.375

Dependent variable: ldivds (natural logarithm of dividends: Datastream).

Heteroskedasticity-robust t statistics in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The insignificance for investment opportunity variables may reflect the absence of variation in perceived growth options for the South African sample beyond what internal resources can finance, or a reluctance to act on them, possibly due to a lack of strong competition in markets for products or corporate control. Alternatively, it may be that opportunities are foregone to indicate a credible signal to investors.

A negative and significant sign was observed for leverage. This may imply an effect for perceived risk, either on behalf of the firms themselves or their creditors. While the theoretical sign can vary, and some studies find indeterminate results, a negative sign is consistent with much of the reported literature.[9]

---

[9] Nyere and Wesson (2019) find leverage to be positive but only significant at 10% for the full sample. Driver, Grosman and Scaramozzino (2020) find leverage to be insignificant for the United Kingdom. Von Eije and Megginson (2008), in their European study, find a strongly significant negative sign for all sub-periods and the full sample.

These results may also be contrasted with those of a recent comparator paper: Nyere and Wesson (2019).

Table 5: Comparative analysis with Nyere and Wesson (2019)

	Nyere and Wesson (2019)	**This study**
Dependent variable	Dividend payout ratio	Dividend level
Sample period	1999–2014	1999–2021
General specification	No lagged dependent variable. Regressors unlagged. Deflation applied. Includes non-payers.	Lagged dependent variable. Lagged regressors. No deflation; time dummies. Excludes never-payers.
Common findings	Size is positively significant. Profitability is significantly positive. DAA is negative, not significant for the full period.	Size is positively significant. Profitability is significantly positive.DAA is negative, not significant.
Notable differences	Leverage is positive (10%)	Leverage is negative (5%)

6. Modified specification: interactions with the tax change from 2012

Tax policy changed in 2012 in a way that made distribution more favourable to some classes of investors. Badenhorst (2017) found that corporates (investors) successfully lobbied for higher dividends after the 2012 tax change. To investigate this, we inspected the time dummies and introduced interactive effects between some regressors and a step-time dummy for the period after 2012 in Table 6. The time dummies indicate a positive significant trend in the payout. However, evidence of an *increased* trend in dividends after 2012 is supported only in some specifications.[10]

---

[10] Formal tests of equality were carried out for the sets of time dummies before and after 2012. For columns 1 and 4 of Table 6, the average of the time dummy coefficients post-2012 do not reject the hypothesis of no change. For the specification of Table 6 columns 2 and 3, the test statistics support an increase in dividend trend level in the later period at the 5% significance level.

Table 6: Determinants of dividend payments: interactions with a post-2012 dummy variable

	(1)	(2)	(3)	(4)
L.ldivds	0.050**	0.052**	0.051**	0.052**
	(2.87)	(3.29)	(3.16)	(3.28)
L.ldivds*D2012	0.023	0.019	0.023	0.020
	(1.00)	(0.86)	(0.97)	(0.89)
L.ea	1.147*	0.807+	0.860+	0.818+
	(2.08)	(1.69)	(1.69)	(1.70)
L.lev	-0.991**	-1.258**	-1.078**	-1.261**
	(-2.83)	(-3.03)	(-2.90)	(-3.04)
L.lev*D2012	-0.551	-	-0.519	-
	(-1.29)		(-1.18)	
L.size	7.261***	7.008***	7.123***	6.910***
	(9.39)	(9.34)	(8.25)	(9.41)
age	0.053***	0.036*	0.040**	0.035*
	(4.06)	(2.37)	(2.85)	(2.29)
L.mbf	-0.061	-	-0.024	-
	(-0.82)		(-0.27)	
L.daa	-	-0.044	-0.071	-0.093
		(-0.57)	(-0.86)	(-1.02)
L.daa*D2012	-	-	-	0.232
				(1.46)
constant	-1.519**	-0.619	-0.820	-0.533
	(-3.00)	(-1.14)	(-1.55)	(-0.99)
No. obs.	2 437	2 276	2 231	2 276
σ_u	2.045	1.683	1.776	1.667
σ_e	0.999	0.956	0.964	0.955
ρ	0.807	0.756	0.773	0.753
R^2 within	0.392	0.377	0.377	0.378

Dependent variable: ldivds (natural logarithm of dividends: Datastream).

Heteroskedasticity-robust t statistics in parentheses.

+ p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

Most tests on interacting regressors with the step-time dummy post-2012 indicated a lack of significance. The most interesting interaction effect was with the lagged dependent variable, giving some indication that the coefficient had risen in the later period. While the interaction effect does not show significance, it is positive and the joint effect of the variable and its interaction is highly significant at the 0.0001 level. The effect here is such that the coefficient on the lagged dependent variable increases from about 0.05 to 0.7 after 2012, which is still some way short of the typical values found in similar Lintner-type dividend specifications for other countries.

To check this feature further we ran a split-sample estimation on the two time periods and confirmed the differential effect. For example, the first column coefficients for the

two periods were respectively 0.03 and 0.062, with the former significant at 10% and the latter at 1%. This differential effect thus supports an increase in the smoothing of dividends since 2012. This would make sense if, as the literature suggests, the effect of the tax reform was to make South African firms more appealing to institutional investors. It is beyond the scope of this paper to discuss whether greater reliance on institutional investors by guaranteeing stable dividend flows creates benefits in the form of a reduced cost of capital, or whether that fully compensates for any financialisation effect whereby firms feel constrained to adapt their plans to shareholder pressure.

7. Additional findings for the listed firms sample

We also included further sets of interactions. These interactions explore the potential effect on dividends from corporate governance (or ownership) and in respect of the industry sector where the firm operates. Some literature has suggested a positive role for governance on standard agency grounds that tight governance enables higher dividends by preventing the misallocation of capital. This complements the view that shareholders discipline managers through their reluctance to finance risky projects. The opposite case is that good governance substitutes for dividends as a signalling mechanism so that dividends can be reduced under good governance. While much of the reported literature on governance effects has used developed country datasets, South Africa has modelled its corporate governance system to some extent along the same lines (Institute of Directors in Southern Africa 2016).[11]

Ownership concentration has distinct features in that it internalises any problem regarding the appropriation and distribution of capital gains that characterises dispersed monitors. Whereas corporate governance operates through channels that discipline investment spending, concentrated ownership is said to operate by increasing monitoring to facilitate profitable investment. In this study, we use several indicators of corporate governance and ownership forms: the ratio of directors who are classified as independent from the executives (INDEP), ownership concentration estimated as the percentage of shares held by the largest shareholder (OWN1),

---

[11]   King (2016) recommends, for example, that boards should comprise a majority of non-executive members, most of which should be independent.

ownership concentration estimated as an average percentage of common shares owned by the three largest shareholders (OWN3), and the proportion of shares held by foreign owners (FOREIGN).

Our second set of additional tests is intended to check how homogenous the results are with respect to broad industry. As an experiment, we chose to look at the interactions between the main regressors and the mining industry (MINING), given the historical importance of this sector for the South African economy. These sets of additional results are shown in Table 7.

Table 7: Determinants of dividend payments: interactions with corporate governance variable, ownership and industry variables

	(1)	(2)	(3)	(4)	(5)
L.ldivds	0.060***	0.075**	0.086**	0.067**	0.071**
	(3.64)	(3.23)	(2.76)	(2.75)	(3.71)
L.ea	1.303+	0.799	1.132	-0.362	0.427
	(1.88)	(0.93)	(0.96)	(-0.26)	(0.79)
L.lev	-0.710	-0.947	-1.163	-0.546	-1.196**
	(-1.29)	(-1.50)	(-1.30)	(-0.75)	(-2.81)
L.size	4.842***	8.296***	8.527***	4.081*	7.124***
	(3.64)	(6.17)	(4.84)	(2.58)	(7.79)
age	0.051***	0.020	0.012	0.051**	0.038**
	(3.48)	(1.01)	(0.47)	(2.75)	(2.74)
L.mbf	0.154	0.090	0.026	0.023	-0.013
	(1.19)	(0.77)	(1.42)	(0.11)	(-0.13)
L.daa	-0.028	-0.001	-0.047	-0.222	-0.086
	(-0.28)	(-0.01)	(-0.25)	(-1.32)	(-1.05)
L.ldivds*indep	0.004	-	-	-	-
	(0.07)				
L.ea*indep	-2.095	-	-	-	-
	(-0.47)				
L.lev*indep	-1.912	-	-	-	-
	(-1.14)				
L.size*indep	**8.553***	-	-	-	-
	(2.06)				
age*indep	-0.039	-	-	-	-
	(-0.65)				
L.mbf*indep	**-0.619+**	**-**	**-**	**-**	**-**
	(-1.72)				
L.daa*indep	-0.079	-	-	-	-
	(-0.22)				
L.ldivds*own1	-	-0.000	-	-	-
		(-0.91)			
L.ea*own1	-	0.005	-	-	-
		(0.24)			
L.lev*own1	-	-0.012	-	-	-

		(-0.63)			
L.size*own1	-	-0.046 (-1.58)	-	-	-
age*own1	-	0.001 (1.49)	-	-	-
L.mbf*own1	-	-0.003 (-1.03)	-	-	-
L.daa*own1	-	-0.003 (-0.71)	-	-	-
L.ldivds*own3	-	-	-0.002 (-1.06)	-	-
L.ea*own3	-	-	-0.010 (-0.14)	-	-
L.lev*own3	-	-	-0.007 (-0.12)	-	-
L.size*own3	-	-	-0.097 (-1.15)	-	-
age*own3	-	-	0.002 (1.29)	-	-
L.mbf*own3	-	-	-0.015 (-1.55)	-	-
L.daa*own3	-	-	-0.001 (-0.12)	-	-
L.ldivds*foreign	-	-	-	-0.000 (-0.44)	-
L.ea*foreign	-	-	-	0.026 (1.23)	-
L.lev*foreign	-	-	-	-0.020 (-1.24)	-
L.size*foreign	**-**	**-**	**-**	**0.067* (2.30)**	**-**
age*foreign	-	-	-	-0.000 (-0.94)	-
L.mbf*foreign	-	-	-	-0.001 (-0.38)	-
L.daa*foreign	-	-	-	0.004 (1.32)	-
L.ldivds*mining	**-**	**-**	**-**	**-**	**-0.044+ (-1.91)**
L.ea*mining	**-**	**-**	**-**	**-**	**5.220+ (1.79)**
L.lev*mining	**-**	**-**	**-**	**-**	**-2.733* (-2.49)**
L.size*mining	**-**	**-**	**-**	**-**	**-2.011* (-1.37)**
age*mining	-	-	-	-	0.013 (0.65)
L.mbf*mining	-	-	-	-	-0.234 (-1.22)
L.daa*mining	**-**	**-**	**-**	**-**	**1.169** (2.95)**

constant	-0.859+	-0.779	-0.777	-0.922*	-0.710
	(-1.78)	(-1.60)	(-1.57)	(-2.01)	(-1.51)
No. obs.	2 216	2 213	2 213	2 183	2 231
σ_u	1.977	1.828	1.795	1.929	1.785
σ_e	0.959	0.962	0.962	0.958	0.959
ρ	0.810	0.783	0.777	0.802	0.776
R^2 within	0.388	0.382	0.382	0.389	0.385

Dependent variable: ldivds (natural logarithm of dividends: Datastream). The main interactive effects discussed in the text are shown in the table in bold type.

Heteroskedasticity-robust t statistics in parentheses.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The main points of note from Table 7 are as follows. First, the size effect is significantly mediated by the interacting variables, with the role of size increasing in importance for those firms with a larger proportion of independent directors and, though less significantly, for foreign firms. Second, another interaction effect is noted for the market-to-book ratio, which is now – for the first time in the estimation – significantly negative and increasingly so as the ratio of independent directors rises, albeit with the interaction significant only at the 0.1 level.

The interaction effects with mining are often significant and indicate that the pattern of dividend decisions can vary considerably depending on the industry, even when controlling for size and age. The results show that the mining sector dividends are less autocorrelated, significantly more responsive to current profitability, significantly more constrained by high leverage and less affected by size variation.

8. Alternative data source: firms in the tax administrative SARS-NT panel

8.1 Data source

The data source is the firm-level SARS_NT panel, which merges four tax data sources from tax return submissions by firms (National Treasury and UNU-WIDER 2021). These sources are company income tax data, value-added-tax data, employee income tax data and customs data from firms that trade internationally (Pieterse, Gavin and Kreuser 2018). Two basic differences in coverage as compared with the Refinitiv/Datastream dataset of JSE firms are (i) the database captures listed and unlisted firms, including a tail of very small firms, and (ii) the database captures only

firms liable to pay tax in South Africa, including JSE firms incorporated in South Africa.

8.2 Data sample

The data used for estimation are a subset of the total in the SARS_NT panel, which includes a large number of very small firms. We restricted the sample to firms that are large enough to be of interest while retaining a sufficient number of observations – approximately the same as those in the listed firms sample. Specifically, we included only (i) firms with issued share capital equal to or greater than R1 million; (ii) firms that have non-missing and non-zero values for sales in each year; (iii) firms that have paid a dividend in the year of observation; and (iv) firms that have non-negative values for the return on assets.

In terms of sectoral coverage, the following were excluded: electricity, gas and water supply; financial intermediation, insurance, real estate and business services; and community, social and personal services. The following small sectors were combined: agriculture, hunting, forestry and fishing; and construction. All independent variables were winsorized at 1% except the dividend payment variable. The sample period is from 2012 to 2019, with annual data. Descriptive statistics for the variable set used in the estimation are shown in Table 8.

Table 8: Descriptive statistics for the SARS_NT panel

Variable[12]	Symbol	Obs	Mean	Median	Std. dev.	Min	Max
Dividend payments (logged)	ldivds	2 944	16.528	16.455	2.300	0.001	24.406
Growth rate of total assets (%)	daa	2 944	0.139	0.059	0.549	-0.899	5.724
Return on assets ratio	ea	2 944	0.206	0.132	0.388	0.004	7.147
Leverage ratio	lev	2 944	0.446	0.404	0.272	0.006	2.356
Sales (logged)	lsize	2 944	19.434	19.377	1.771	12.729	22.658

---

[12]   All variables are winsorized at 1% except dividend payments.

8.3 Specification

Fixed effects estimation is also used with this sample. The sample is smaller – there are few observations on dividends pre-2012 and this is the start year for our estimation. The panel is also highly unbalanced with a mean of only 2.6 for the number of observations per firm; only about a quarter of the firms have four or more consecutive observations. The unbalanced sample is partly a result of including only firms paying a dividend in the year of observation. This condition is appropriate for this sample as it includes a large number of private, unlisted firms. That means that there is no market pressure for continuous dividend payments and, in many cases, such payments would be sporadic. Nevertheless, the result is a much more unbalanced sample than we analysed for the listed variables in section 5. As a consequence of this, the estimation omits a lagged dependent variable and uses unlagged independent variables.

Apart from the lag structure, the specification is similar to that for the listed sample except that the firm age variable is not available (only the year in which the firm is admitted to the database).

$$D_{i,t} = \alpha_0 + \alpha_1 EA_{i,t} + \alpha_2 DAA_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 SIZE_{i,t} + \partial_t + \epsilon_{it} \qquad (2)$$

where *D* is dividend payments (in natural logs), *EA* is the ratio of earnings to assets, *DAA* is the rate of change of assets, *LEV* is leverage, and *SIZE* is the log of sales.

8.4 Results

Baseline results for the SARS_NT sample are shown in Table 9, along with interactions between the main variables and industry sectors.

Table 9: Results for the SARS_NT panel: baseline estimation and sectoral interactions with manufacturing as the base case

	(1)	(2)	(3)	(4)	(5)
	ldivds	ldivds	ldivds	ldivds	ldivds
daa	-0.093	-0.092	-0.099	-0.089	-0.280**
	(-1.28)	(-1.26)	(-1.36)	(-1.21)	(-2.84)
ea	0.430***	0.429***	0.429***	0.421**	0.437***
	(4.20)	(4.19)	(3.75)	(3.09)	(4.21)
lev	0.519*	0.546*	1.095***	0.559*	0.555*
	(2.28)	(2.39)	(3.34)	(2.46)	(2.47)
lsize	0.200*	0.198*	0.182*	0.193*	0.208*
	(2.36)	(2.34)	(2.16)	(2.23)	(2.46)
lev*mining			-2.693*		
			(-2.06)		
lev*distribution			-0.261		
			(-0.51)		
lev*transport			-1.054*		
			(-2.44)		
lev*agri & con			-1.753		
			(-1.55)		
ea*mining				-0.482	
				(-0.46)	

ea*distribution				0.880	
				(1.50)	
ea*transport				-0.012	
				(-0.07)	
ea*agri & con				0.007	
				(0.03)	
daa*mining					0.434
					(1.28)
daa*distribution					0.048
					(0.24)
daa*transport					0.393**
					(2.81)
daa*agri & con					0.423*
					(1.99)
cons	12.282***	12.355***	12.424***	12.429***	12.165***
	(7.52)	(7.52)	(7.58)	(7.40)	(7.42)
time dummies	YES	YES	YES	YES	YES
sector dummies	NO	YES	YES	YES	YES
N	2944.000	2944.000	2944.000	2944.000	2944.000
rho	0.779	0.776	0.782	0.777	0.777
r^2 (within)	0.039	0.041	0.050	0.042	0.046

t statistics in parentheses. $^+$ p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

In Table 9, columns (1) and (2) present the basic results for the SARS_NT sample, which are similar to those reported in section 5 for the listed sample. There is little difference between the estimated coefficients in column (1), which excludes industry sector dummies, and column (2), where the dummies are included. The size variable is positive and significant at the 0.05 level. The signs of the DAA and EA variables are in line with the literature expectation but are not significant. A surprising result is that leverage is significantly positive in this sample, whereas it had been significantly negative for the listed sample. As noted in section 5, the literature does not have a definitive view of the channel of influence for leverage on dividends. Possible explanations here are that firms that are unconstrained by stock market owners are borrowing tax-free in the prevailing ultra-low interest rate environment to finance private expenditure out of dividends.[13]

The remaining columns of Table 9 show how the estimated coefficients vary by sector using sector interactions with the main regressors LEV, EA and DAA one at a time. There are surprisingly strong results for leverage, where for mining, transport and possibly the combined agriculture and construction sectors the positive sign observed for manufacturing and distribution is neutralised or reversed. No interactive effects were found for EA, but for DAA the results indicate a negative significant effect for the base case of manufacturing as well as mining and distribution, while indicating a positive effect for the remaining sectors.

8.5 Further results for the SARS_NT sample

Although it would be of interest to partition the SARS_NT data by listed and unlisted firms, this is not possible as it is not compulsory for firms to indicate on the company tax form whether they are listed. Generally, no more than 40 firms indicated that they are listed. Nevertheless, this information can be exploited to some degree, as shown in the results in Table 10. We assumed that if a firm indicated that they were listed in 2019, then they were listed from 2012 to 2019.

---

[13]   There may also be a more complex relation mediated by size. Leverage for private firms tends to increase with size, whereas the opposite is true of public firms (Dinlersoz et al. 2019).

Table 10: Further results for the SARS_NT panel

	(1)	(2)[14]	(3)	(4)	(5)
	ldivds	ldivds	ldivds	ldivds	ldivds
daa	-0.092	-0.135[+]	-0.114	-0.114	-0.136[+]
	(-1.26)	(-1.74)	(-1.51)	(-1.49)	(-1.76)
ea	0.429[***]	0.735[***]	0.682[***]	0.740[***]	0.676[***]
	(4.19)	(4.23)	(4.32)	(4.26)	(4.26)
lev	0.546[*]	0.577[*]	0.601[*]	0.499[*]	0.481[+]
	(2.39)	(2.38)	(2.48)	(2.10)	(1.96)
lsize	0.198[*]	0.243[*]	0.196[*]	0.234[**]	0.189[*]
	(2.34)	(2.55)	(2.32)	(2.74)	(2.18)
lev*listed			-3.175		
			(-1.39)		
ea*listed				-7.139[*]	
				(-2.46)	
daa*listed					1.001[+]
					(1.68)
cons	12.355[***]	11.240[***]	12.374[***]	11.649[***]	12.522[***]
	(7.52)	(6.06)	(7.55)	(7.06)	(7.40)
time dummies	YES	YES	YES	YES	YES
sector dummies	YES	YES	YES	YES	YES
N	2944.000	2697.000	2810.000	2810.000	2810.000
rho	0.776	0.791	0.781	0.773	0.773
r^2 (within)	0.041	0.058	0.045	0.055	0.042

t statistics in parentheses. [+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.00$

---

[14] Excludes listed firms.

Column (1) of Table 10 simply repeats the basic result of Table 9 (col. 2) where sector-level dummies are included. Column (2) of Table 10 excludes those firms that voluntarily declare listed status. While the general pattern of the results is unaltered, the coefficient for DAA, excluding the listed firms, is now significantly negative at the 0.1 level. Furthermore, the responsiveness to EA is increased. A higher positive coefficient for EA is expected as listed firms are more likely to smooth dividends with respect to profitability.

For the remaining columns, the three variables LEV, EA and DAA interact with the listed status. The EA interaction again shows that listed firms are less responsive to the return on assets. The interaction with DAA, while only significant at the 0.1 level, confirms that it is the presence of listed firms in the sample that prevents a negative and weakly significant DAA effect from being observed.

9. Conclusions

Previous studies of South African dividend behaviour have produced a partial understanding of the topic. Nevertheless, many issues have remained unclear or unexplored. This is partially due to the nature of the available data. Much of the work has been done on firms listed on the JSE, but that is neither a full representation of all types of firms nor is it confined to firms operating within South Africa. In this study, we have attempted a broader focus by accessing the South Africa Tax Administrative database (SARS_NT) in addition to the JSE.

Data sources are, however, not the only challenge to gaining a deeper understanding of dividends. The theoretical framework that informs dividend studies in advanced countries is somewhat loose. First, there are several competing theories; second, some of the main variables used such as leverage have different interpretations; and third, the measurement of some variables such as investment opportunity is contestable. In the South African context, there is the added difficulty of judging which special features may modify the channels of influence observed in other country studies.

Following a review of these issues, we proposed two sets of estimations, suitable for the JSE and the SARS_NT data sample respectively. For the former set, we obtained results in line with the main global literature for standard variables such as past

profitability, size and age. A strongly negative leverage effect appears to support an interpretation that it is a proxy for risk. However, there are also some important differences with other standard works. For example, we did not generally observe significance for proxies for investment opportunities. Autoregressive behaviour also seemed weaker than in other studies.

Our study investigated whether some of these features could be explained by the financial environment in South Africa such as the 2012 tax reform. In split samples and in regression runs involving interactions with a dummy variable for post-2012 there was some support for an increase in the autoregressive coefficient after 2012, potentially indicating increased dividend stability. There was some evidence of an upward tendency in the trend level of dividend payments after 2012. It also appears that there are significant industrial sector differences in South African dividend behaviour; for mining, we found significance for this industrial dummy, interacted with four separate regressors.

Other features of the financial environment were explored, including corporate governance and ownership variables. We found that a higher proportion of independent directors increased the effect of size in the dividend decision. Foreign ownership had the same effect. We did not, however, find any significant effects for ownership concentration. There was also some weak evidence that the proportion of independent directors was associated with attention to investment opportunity, as measured by the market-to-book ratio.

The SARS_NT sample was useful to analyse given that it contained unlisted firms and was restricted to firms with operations in South Africa. However, the ability to compare the results of this sample with the JSE sample is limited as there is no way of comprehensively identifying listed firms within this sample – apart from a set of firms that voluntarily do so. The unbalanced nature of the sample also required a somewhat different specification, which limits the comparison between the two sets of results.

The main findings of the sample are in keeping with what would be expected from firms that are not subject to stock market pressure. The investment opportunity variable as captured by asset growth is consistently negative, though only occasionally significant. The response to profitability is stronger than for the JSE sample, indicating that less

smoothing is going on, though here again caution is warranted in making comparisons as these estimates exclude an autoregressive term. There is a marked difference for the leverage variable, which is significantly positive in this sample. However, once again in this sample, there are strong industrial interactions, not least for leverage where the positive effect noted in the main sample is reversed for some industries.

While the full set of listed firms cannot be separated from the sample, we performed a regression where the set of firms with voluntary listed status was omitted. This increased the significance of the investment opportunity variable and made dividends even more responsive to current profitability. In other words, the effect was to accentuate the difference reported above between the SARS_NT sample and the JSE one. Similar effects were found using the full SARS_NT sample but using interactive effects of voluntary listed status. The leverage coefficient sign remained positive, but it should be kept in mind that this coefficient seems sensitive to the industry sector.

Both sets of data have been exploited to reveal interesting patterns of dividend behaviour and to see how stable they are across time, the corporate form, and the sector. It is, however, harder to draw firm policy conclusions on the basis of these preliminary results. Rather, they can serve as an aid to organising a research agenda for financial and industrial policy. We close with some brief indications of how the results might be useful in that regard.

First, the failure to find robust evidence for an investment opportunity variable needs interpretation and merits the question of whether firms have the capacity to credibly convey such opportunities to investors, necessitating higher payout than warranted.

Second, there is considerable industrial variation in dividend behaviour: does it correspond to investment opportunity or other considerations, including the status of competition in the product market and the market for corporate control?

Third, the 2012 tax reforms seem to have made the distribution of dividends more shareholder-friendly. While this may encourage domestic and foreign investment, does it have consequences for managerial autonomy, risk-taking, re-investment and long-termism?

Fourth, we find that a higher proportion of independent directors and a higher incidence of foreign ownership are associated with a higher responsiveness of dividends to size.

Finally, unlisted firms, being less subject to investor pressure, appear more responsive to investment opportunities but also smooth payout in respect of less earnings than listed firms.

Many of these insights are entwined in the broader debate of whether investment for growth is best assured by a frictionless stock market that lowers the cost of capital, versus the alternative view that stock-market-oriented economies tend to have lower capital investment than others due to a bias against re-investment, a preference for payout, and a tendency towards short-termism. Resolving this issue is beyond the scope of this paper, but we hope that our results can inform such a debate.

References

Adjaoud, F and Ben-Amar, W. 2010. 'Corporate governance and dividend policy: shareholders' protection or expropriation?' *Journal of Business Finance and Accounting* 37(5–6): 648–667.

Andreoni, A, Robb, N and Van Huellen, S. 2021. 'Profitability without investment: how financialization undermines structural transformation in South Africa'. In S*tructural transformation in South Africa: the challenges of inclusive industrial development in a middle-income country,* edited by A Andreoni, P Mondliwa, S Roberts and F Tregenna*.* Oxford and New York: Oxford University Press.

Asker, J, Farre-Mensa, J and Ljungqvist, A. 2015. 'Corporate investment and stock market listing: a puzzle?' *Review of Financial Studies* 28(2): 48.

Badenhorst, W M. 2017. 'Tax preferences, dividends and lobbying for maximum value'. *South African Journal of Economic and Management Sciences* 20(1): 1–10.

Baker, H K and Weigand, R. 2015. 'Corporate dividend policy revisited'. *Managerial Finance* 41(2): 126–144.

Balli, F, Agyemang, A, Gregory-Allen, A and Bali, H O. 2022. 'Dividend smoothing: the role of cross-listing'. *Journal of Corporate Finance* 72: 1–13.

Benito, A and Young, G. 2003. 'Hard times or great expectations? Dividend omissions and dividend cuts by UK firms'. *Oxford Bulletin of Economics and Statistics* 65(5): 531–555.

Bernardo, A E, Chowdhry, B and Goyal, A. 2007. 'Growth options, beta, and the cost of capital'. *Financial Management* 36: 1–13.

Bertrand, M and Mullainathan, S. 2003. 'Enjoying the quiet life? Corporate governance and managerial preferences'. *Journal of Political Economy* 111(5): 1043–1075.

Brav, A, Graham, J R, Harvey, C R and Michaely, R. 2005. 'Payout policy in the 21st century'. *Journal of Financial Economics* 77(3): 483–527.

Campello, M, Graham, J R and Harvey, C R. 2010. 'The real effects of financial constraints: evidence from a financial crisis'. *Journal of Financial Economics* 97(3): 470–487.

Copeland, T E and Weston, J F. 1988. *Financial theory and corporate policy*. Massachusetts: Addison-Wesley.

Demsetz, H. 1993. 'The theory of the firm revisited'. In *The nature of the firm: origins, evolution and development*, edited by O E Williamson and S G Winter. Oxford and New York: Oxford University Press.

Dinlersoz, E, Kalemli-Ozcan, S, Hyatt, H and Penciakova, V. 2019. 'Leverage over the life cycle and implications for firm growth and shock responsiveness'. National Bureau of Economic Research (NBER) Working Paper 25226.

Driver, C, Grosman, A and Scaramozzino, P. 2020. 'Dividend policy and investor pressure'. *Economic Modelling* 89: 559–576.

Driver, C and Harris, L. 2021. 'Investment in South Africa'. In *The Oxford handbook of the South African economy,* edited by A Oqubay, F Tregenna and I Valodia*.*
Oxford and New York: Oxford University Press: 441–466.

Eisenhardt, K M. 1989. 'Agency theory: an assessment and review'. *Academy of Management Review* 14: 57–74.

Firer, C, Gilbert , E and Maytham, A. 2008. 'Dividend policy in South Africa'. *Investment Analysis Journal* 68: 5–19.

He, J J and Tian, X. 2013. 'The dark side of analyst coverage: the case of innovation'. *Journal of Financial Economics* 109: 856–878.

Institute of Directors in Southern Africa. 2016. *King IV Report on Corporate Governance for South Africa.*

Jensen, M C and Meckling, W H. 1976. 'Theory of the firm: managerial behavior, agency costs and ownership structure'. *Journal of Financial Economics* 3: 305–360.

Kahle, K and Stulz, R M. 2021. 'Why are corporate payouts so high in the 2000s?' NBER Working Paper 26958.

La Porta, R, Lopez-de-Silanes, F, Shleifer, A and Vishny, R. 2000. 'Investor protection and corporate governance'. *Journal of Financial Economics* 58: 3–27.

Lazonick, W. 2018. 'The functions of the stock market and the fallacies of shareholder value'. In *Corporate governance in contention*, edited by C Driver and G Thompson. Oxford and New York: Oxford University Press.

Lintner, J. 1956. 'Distribution of incomes of corporations among dividends, retained earnings, and taxes'. *American Economic Review* 46(2): 97–113.

Michaely, R and Moin, A. 2022. 'Disappearing and reappearing dividends'. *Journal of Financial Economics* 143: 207–226.

Molly, V and Michiels, A. 2021. 'Dividend decisions in family businesses: a systematic review and research agenda'. *Journal of Economic Surveys* 36(4): 992–1026.

National Treasury and UNU-WIDER. 2021. 'CIT-IRP5 Firm-Level Panel 2008–2018 [dataset]. Version 4.0'. Pretoria: South African Revenue Service [producer of the original data], 2019. Pretoria: National Treasury and UNU-WIDER [producer and distributor of the harmonised dataset], 2021.

Nel, R. 2018. 'Investor tax-driven preferences for dividends and share repurchases of listed companies'. *South African Journal of Accounting Research* 32(1): 71–87.

Nyere, L and Wesson, N. 2019. 'Factors influencing dividend payout decisions: evidence from South Africa'. *South African Journal of Business Management* 50(1): 1–16.

Pieterse, D, Gavin, E and Kreuser, C F. 2018. 'Introduction to the South African revenue service and National Treasury firm-level panel'. *South African Journal of Economics* 86: 6–39.

Séverin, E and Du Jardin, P. 2011. 'Dividend policy'. *Bankers, Markets & Investors* 115(1): 37–54.

Stein, J C. 2003. 'Agency, information and corporate investment'. In *Handbook of the economics of finance* 1(A), edited by G M Constantinides, M Harris and R M Stulz. Amsterdam: North Holland: 111–165.

Von Eije, H and Megginson, W L. 2008. 'Dividends and share repurchases in the European Union'. *Journal of Financial Economics* 89(2): 347–374.

Wesson, N, Bruwer, B W and Hamman, W D. 2015. 'Share repurchase and dividend payout behaviour: the South African experience'. *South African Journal of Business Management* 46(3): 43–54.